

WHAT IS CLAIMED IS:

1. A printed circuit assembly carrier comprising:
a carrier frame configured to hold a selected printed circuit assembly of at least two different printed circuit assemblies in at least two different orientations;
a first toolless retention feature coupled to a first surface of the carrier frame and configured to retain the selected printed circuit assembly; and
a second toolless retention feature coupled to a second surface of the carrier frame and configured to retain another printed circuit assembly in at least one of the orientations.
2. The carrier according to Claim 1 wherein:
the carrier frame is constructed from molded plastic.
3. The carrier according to Claim 1 wherein:
the carrier frame comprises a first member having parallel opposing planar surfaces including an interior planar surface and an exterior planar surface, the exterior planar surface being the first surface coupled to the first toolless retention feature, the interior planar surface being capable of receiving and retaining the selected printed circuit assembly.
4. The carrier according to Claim 3 wherein:
the carrier frame comprises a second member coupled at an end of the first member substantially perpendicular to the first member, the second member extending beyond the interior planar surface to the second surface that couples to the second toolless retention feature.
5. The carrier according to Claim 1 wherein:
the carrier frame is constructed from plastic; and
the first and second toolless retention features are plastic snaps extending from the carrier frame.

6. The carrier according to Claim 1 further comprising:
a cable retention feature coupled to the carrier frame.
7. An electronic device assembly comprising:
a housing;
first and second printed circuit assemblies of respective first and second types
capable of coupling to the housing;
a plurality of identical printed circuit assembly carriers capable of coupling the
first and second printed circuit assemblies to the housing, the carriers
coupling the printed circuit assemblies of different types to the housing in
different orientations via toolless retention features.
8. The electronic device assembly according to Claim 7 further comprising:
a third printed circuit assembly capable of coupling to a side of the housing.
9. The electronic device assembly according to Claim 7 further comprising:
a third printed circuit assembly capable of coupling to a side of the housing, the
third printed circuit assembly being substantially planar and having a first
planar side capable of coupling to the housing and a second opposing
planar side, wherein
a first of the plurality of identical printed circuit assembly carriers couples the first
printed circuit assembly to the second planar side of the third printed
circuit assembly.
10. The electronic device assembly according to Claim 7 further comprising:
a third printed circuit assembly capable of coupling to a side of the housing, the
third printed circuit assembly being substantially planar and having a first
planar side capable of coupling to the housing and a second opposing
planar side, wherein
a second of the plurality of identical printed circuit assembly carriers couples the
second printed circuit assembly substantially perpendicular to the third
printed circuit assembly.

11. The electronic device assembly according to Claim 10 wherein:
the second printed circuit assembly and the second of the two identical printed
circuit assembly carriers are implemented for usage of the electronic
device assembly in a duplex configuration.
12. The electronic device assembly according to Claim 7 further comprising:
a third printed circuit assembly capable of coupling to a side of the housing,
wherein:
the electronic device is a hard disk drive;
the housing is a hard disk drive housing, chassis, or cage; and
the first printed circuit assembly is a management printed circuit assembly, the
second printed circuit assembly is a duplex printed circuit assembly, and
the third printed circuit assembly is a hard disk drive printed circuit
assembly.
13. The electronic device assembly according to Claim 7 further comprising:
a cable retention feature coupled to the carriers.
14. A method of configuring an electronic device comprising:
providing a carrier that can hold at least two different printed circuit assemblies in
at least two different configurations with respect to a housing;
coupling a first printed circuit assembly to the housing using the carrier, the first
printed circuit assembly being coupled to the housing via toolless retention
in a first orientation.
15. The method according to Claim 14 further comprising:
coupling a second printed circuit assembly to a surface of the housing; and
coupling the first printed circuit assembly to the second printed circuit assembly
using the carrier, the first printed circuit assembly being coupled to the
second printed circuit assembly via toolless retention in a first orientation.

16. The method according to Claim 15 further comprising:
coupling a third printed circuit assembly to the second printed circuit assembly
using a second carrier, the third printed circuit assembly being coupled to
the second printed circuit assembly via toolless retention in a second
orientation.
17. The method according to Claim 14 further comprising:
coupling an essentially planar second printed circuit assembly to a planar surface
of the housing; and
coupling the first printed circuit assembly to the second printed circuit assembly
using the carrier, the first printed circuit assembly being coupled to the
second printed circuit assembly via toolless retention in a first orientation
with the first printed circuit assembly aligned essentially parallel to the
planar surface of the housing.
18. The method according to Claim 17 further comprising:
coupling a third printed circuit assembly to the second printed circuit assembly
using a second carrier, the third printed circuit assembly being coupled to
the first printed circuit assembly via toolless retention in a second
orientation with the third printed circuit assembly aligned essentially
perpendicular to the second printed circuit assembly.
19. The method according to Claim 14 further comprising:
retaining cables extending between the housing and the first printed circuit card
assembly within a cable retention feature of the carrier.
20. The method according to Claim 14 further comprising:
coupling a second printed circuit assembly to the first printed circuit assembly
using a second carrier, the second printed circuit assembly being coupled
to the first printed circuit assembly via toolless retention in a second
orientation.

21. A printed circuit assembly carrier comprising:
means for holding a printed circuit assembly, the holding means being capable of
holding a plurality of different printed circuit assemblies in a plurality of
different orientations; and
means for retaining the first printed circuit assembly using toolless retention.